

STATE OF CALIFORNIA
AIR RESOURCES BOARD

AIR MONITORING QUALITY ASSURANCE

VOLUME V

AUDIT PROCEDURES
FOR
AIR QUALITY MONITORING

APPENDIX Q

PERFORMANCE AUDIT PROCEDURES
FOR LEAD ANALYSIS
(TOTAL SUSPENDED PARTICULATE (TSP) - LABORATORY AUDITS)

MONITORING AND LABORATORY DIVISION

SEPTEMBER 2002

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APPENDIX Q.1

PERFORMANCE AUDIT PROCEDURES
FOR LEAD ANALYSIS
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MONITORING AND LABORATORY DIVISION

SEPTEMBER 2002

Q.1.0 INTRODUCTION

Q.1.0.1 GENERAL INFORMATION

The Inorganics Laboratory Section of the Air Resources Board's (ARB) Monitoring and Laboratory Division (MLD) participates in the United States Environmental Protection Agency (U.S. EPA) National Performance Audit Program (NPAP) for lead. An audit sample filter with accompanying data forms is sent to the ARB's Quality Assurance Section (QAS) from the U.S. EPA. The QAS delivers the audit sample filter and data forms to the Inorganics Laboratory for processing and analysis. The laboratory uses atomic absorption spectrophotometry and follows their standard operating procedures (SOP) 005 for processing and analysis to determine the amount of lead in suspended particulate matter. Analysis results are given to QAS for return to the U.S. EPA for final calculations. The U.S. EPA calculates the percent difference of the sample for lead and sends the results back to QAS.

The purpose of the audit is to assess the accuracy of the laboratory's ability to determine the amount of lead in suspended particulate matter.

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PERFORMANCE AUDIT PROCEDURES
FOR LEAD ANALYSIS
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Q.2.0 AUDIT PROCEDURES

Q.2.0.1 INITIATION OF AUDIT

Upon receiving the U.S. EPA audit filters, the QAS documents the receipt of the filter and accompanying data forms and forwards them to the Inorganics Laboratory for analysis.

Q.2.0.2 STANDARD OPERATING PROCEDURES

All U.S. EPA supplied filters being audited by the Inorganics Laboratory are processed using SOP 005, 08-01-88.

Q.2.0.3 COMPLETION OF AUDIT

Upon completing filter processing and analysis, the Inorganics Laboratory shall return the audit datasheet (see Figure Q.2.0.1) containing raw data and any additional comments or information to QAS.

Lead Audit (9 9 0 3)

Study ID 0799

For optimum accuracy, it is recommended that characters be written block style without touching sides. Please use black ink only! See example below:

0 1 2 3 4 5 6 7 8 9

Date of Analysis 07 / 13 / 99

Sample Number

Results
µg/filter strip

1399

300.

2399

900.

The closing date for this audit is July 23, 1999.

Please place comments on Questionnaire.

Figure Q.2.0.1
Lead Audit Datasheet

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PERFORMANCE AUDIT PROCEDURES
FOR LEAD ANALYSIS
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Q.3.0 POST AUDIT CALCULATIONS

Q.3.0.1 RETURN RESULTS TO THE U.S. EPA

After reviewing the laboratory results for completeness, the QAS shall send the raw data report to the U.S. EPA for calculation of the results.

Q.3.0.2 CALCULATION OF PERCENT DIFFERENCE

The U.S. EPA shall calculate the percent difference between the ARB's laboratory results and the U.S. EPA's expected results using the following equation:

$$\text{Percent Difference} = \frac{(\text{Measured Conc.} - \text{Assigned Conc.})}{\text{Assigned Concentration}} \times 100$$

Q.3.0.3 FINAL AUDIT REPORT

Upon receipt of the U.S. EPA's audit results (see Figure Q.3.0.1), the QAS will forward the results with a cover letter to the Inorganics Laboratory with recommendations (see Figure Q.3.0.2 Example Cover Letter).

Results of Lead (Pb) Audit

For 3rd Quarter 1999

Date of Audit: 07/13/1999

Sample Number	Reported Value	Actual Value	Difference	% Difference
-----	-----	-----	-----	-----
	(- - - µg Pb/filter strip - - -)			
1399	300.00	300.00	0.00	0.0
2399	900.00	950.00	-50.00	-5.3
-----	-----	-----	-----	-----

Figure Q.3.0.1
Final Lead Audit Results Report Sheet



Winston H. Hickox
Secretary for
Environmental
Protection

Air Resources Board

Alan C. Lloyd, Ph.D.
Chairman

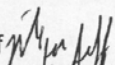
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


Gray Davis
Governor

MEMORANDUM

TO: George Lew, Chief
Engineering and Laboratory Branch

THROUGH: Jeff Cook, Chief 
Quality Management and Operations Support Branch

FROM:  Michael Miguel, Acting Manager
Quality Assurance Section

DATE: August 17, 1999

SUBJECT: THIRD QUARTER 1999 NATIONAL PERFORMANCE AUDIT PROGRAM
LEAD AUDIT RESULTS

Staff has received the National Performance Audit Program lead (Pb) laboratory audit results for the third quarter of 1999. The results are as follows (reported and referenced values are in $\mu\text{g Pb}$ per filter strip):

Sample Number	Reported Values	Actual Values	Percent Difference
1399	300.00	300.00	0.0
2399	900.00	950.00	-5.3

Thank you for your participation in this program. If you have any questions, please contact Merrin Bueto at (916) 323-0346.

cc: Mike Poore
Betsy Ronsse
Michael Humenny
Merrin Bueto 

California Environmental Protection Agency

Figure Q.3.0.2
Example Cover Letter